

In re Appln. of Jurczyk et al
Application No. 10/058,561

The following listing of claims replaces and supercedes any prior listing of claims:

Listing of Claims:

Claims 1-7 (Withdrawn).

Claims 8-27 (Cancelled).

Claims 28-44 (Withdrawn).

Claims 45-67 (Cancelled).

68.(Currently Amended) A method of producing neutrons in a chamber containing an anode electrode, a ~~semi-transparent~~ suppressor cathode electrode, consisting of a semi-transparent electrically-conducting material that limits electron flow to said anode, and a ~~semi-transparent~~ leeching cathode electrode, consisting of a semi-transparent electrically-conducting material that removes electrons, comprising the steps of; introducing a fusible gas, comprising either deuterium gas or a mixture of deuterium and tritium gas, into the vacuum chamber; creating ~~a voltage differential~~ high voltage differentials between the cathode electrodes, comprised of said suppressor electrode and said leeching electrode, and ~~the said~~ anode electrode, and ~~applying a high voltage to the leeching cathode, and a bias voltage to the suppressor electrode relative to the leeching cathode, whereby and a bias voltage to said suppressor electrode relative to said leeching cathode~~, such that a high-pressure high-resistance gaseous discharge forms primarily between the said anode and ~~semi-transparent suppressor surfaces~~ said cathode electrodes and extends through the openings of ~~the said semi-transparent suppressor electrode surfaces~~ cathode electrodes, passing through ~~the said suppressor electrode and said leeching electrodes~~ electrode and an intra-cathode region defined by ~~at least one surface of the cathode electrode~~ the volume enclosed by said suppressor electrode, and ~~whereby such that ions selected resulting from said gaseous discharge and constituted from the group consisting of deuterium ions and tritium ions of said gaseous discharge~~ said fusible gas are accelerated by the said voltage differential, with a substantial portion of said ions passing through the openings of the said semi-transparent cathode ~~surfaces~~ electrodes; allowing a portion of said ions to undergo charge-exchange collisions with background gas particles, comprised of said fusible gas, to ~~produce~~ become fast-neutral particles ~~s~~ lected from the group consisting of deuterium particles and tritium

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particles, ~~whereby~~ such that a portion of said fast-neutral particles pass through ~~the~~ said openings of ~~the~~ said semi-transparent cathode ~~surfaces~~ electrodes, and ~~whereby~~ said ~~such that~~ a high-pressure high-resistance gaseous discharge is sustained primarily through charged particle generation initiated by ~~the~~ said ions and said fast neutral particles; and generating neutrons from said high-pressure high-resistance gaseous discharge as a product of fusion collisions occurring between said ions and said background gas particles and between said fast-neutral particles and said background gas particles.

69.(Currently Amended) The method according to claim 68 wherein at least a portion of said background gas particles that experience collisions with said ions ~~or~~ and said fast-neutral particles are situated on a surface of a material within the vacuum chamber ~~at the time that they experience the collisions.~~

Claim 70 (Withdrawn).

71.(Currently Amended) The method according to claim 69, wherein ~~the~~ said portion of said background gas particles that are situated on a said surface ~~of a material~~ within the said vacuum chamber are attached to ~~the~~ said surface by physical adsorption.

72. (Currently Amended) The method according to claim 68, wherein ~~the~~ said chamber and said electrodes have a shape selected to produce said neutrons with a spatial distribution dependent on the volume occupied by said high-pressure high-resistance discharge ~~volume~~ within ~~the~~ said shape.

73. (Currently Amended) The method according to claim 68, further comprising the step of employing an electron management system to augment the neutron production power efficiency of ~~the~~ said method ~~through~~ high-pressure high-resistance gaseous discharge by adjustment of said bias voltage resulting in the reduction of space-charge buildup and power consumed by the production or conduction of electrons ~~through the gaseous discharge~~ in said high-pressure high-resistance gaseous discharge.

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Claim 74 (Withdrawn).

Claim 75 (Withdrawn).

76. (Currently Amended) The method according to claim 73 wherein ~~the~~ said electron management system further comprises baffle electrodes, comprising electrically-conductive material with an electrical connection selected from the group of electrically floating or electrically connected to said leeching electrode, situated within said intra-cathode region to minimize intra-cathode region further inhibit space charge build up and to intercept errant particle and electron paths for minimization of electron generation.

Claim 77 (Withdrawn).

Claims 78-161 (Cancelled).